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used to identify a scene cut.

What is claimed is:

1	1. A method of detecting at least one of a pan and a zoom in a video sequence,		
2	comprising:		
.3	selecting a set of frames from a video sequence;		
4	determining a set of motion vectors for each frame in the set of frames;		
5	identifying at least two largest regions in each frame having motion vectors with		
6	substantially similar orientation in a reference coordinate system;		
7	determining percentages of each frame covered by the at least two largest regions;		
8	determining a statistical measure of the motion vector orientations in the reference		
9	coordinate system for at least one of the two largest regions; and		
10	comparing the percentages and statistical measure to threshold values to identify at		
11	least one of a pan and a zoom in the video sequence.		
1	2. The method of claim 1, wherein the step of selecting a set of video frames from a		
2	video sequence further comprises:		
3	identifying a scene cut between two frames in the video sequence; and responsive to		

identifying a scene cut between two frames in the video sequence; and responsive to the identification of a scene cut, selecting a set of video frames from the video sequence that includes all the frames in

the video sequence up to and including a frame just before the scene cut.

- 3. The method of claim 2, wherein frame differences and motion information are
- 4. The method of claim 1, wherein the reference coordinate system is one from the group of reference coordinate systems consisting of polar, Cartesian, spherical and cylindrical coordinate systems.
- 1 5. The method of claim 1, wherein the percentages of each frame covered by the at 2 least two largest regions are determined from the number of pixels in each region as a percentage 3 of the total number of pixels in a frame.

1	6. The met	hod of claim 1, wherein the statistical measure is a variance.				
1	7. A system	n for detecting at least one of a pan and a zoom in a video sequence,				
2	comprising:	comprising:				
3	a preprocessor for selecting a set of frames from a video sequence; and					
4	a motion analyzer for determining a set of motion vectors for each frame in the set					
5	fram	es, identifying at least two largest regions in each frame having motion				
6	vect	ors with substantially similar orientation in a reference coordinate system				
7	dete	rmining percentages of each frame covered by the at least two largest				
8	regio	ons, determining a statistical measure of the motion vector orientations in				
9	the r	reference coordinate system for at least one of the two largest regions, and				
10	com	paring the percentages and statistical measure to threshold values to				
11	iden	tify at least one of a pan and a zoom in the video sequence.				
1	8. The syst	tem of claim 7, wherein the step of selecting a set of video frames from a				
2	video sequence further comprises					
3	identifying a scene cut between two frames in the video sequence and responsive to					
4	the i	dentification of a scene cut, and				
5	selecting a s	selecting a set of video frames from the video sequence that includes all the frames i				
6	the	video sequence up to and including a frame just before the scene cut.				
1	9. The syst	tem of claim 8, wherein frame differences and motion information are				
2	used to identify a scene cut.					
1	10. The sys	tem of claim 7, wherein the reference coordinate system is one from the				
2	group of reference coor	group of reference coordinate systems consisting of polar, Cartesian, spherical and cylindrical				
3	coordinate systems.					
1	11. The syst	tem of claim 7, wherein the percentages of each frame covered by the at				
2	least two largest regions are determined from the number of pixels in each region as a percentage					
3	of the total number of pixels in a frame.					

1	12. The s	ystem of claim 7, wherein the statistical measure is a variance.			
1	13. A cor	nputer-readable medium having stored thereon instructions which, when			
2	executed by	executed by a processor in a system for detecting at least one of a pan and a zoom in a			
3	video sequer	video sequence, cause the processor to perform the operations of:			
4	selecting	selecting a set of frames from a video sequence;			
5	determining a set of motion vectors for each frame in the set of frames;				
6	identifying at least two largest regions in each frame having motion vectors with				
7	S	substantially similar orientation in a reference coordinate system;			
8	determining percentages of each frame covered by the at least two largest regions;				
9	determining a statistical measure of the motion vector orientations in the reference				
10	c	coordinate system for at least one of the two largest regions; and			
11	comparii	comparing the percentages and statistical measure to threshold values to identify at			
12	10	least one of a pan or a zoom in the video sequence.			
1	14. The	computer-readable medium of claim 13, wherein the step of selecting a set of			
2	video frames from a video sequence further comprises:				
3	identifyi	identifying a scene cut between two frames in the video sequence; and responsive to			
4	ti	ne identification of a scene cut,			
5	selecting	a set of video frames from the video sequence that includes all the frames in			
6	t	he video sequence up to and including a frame just before the scene cut.			
1	15. The	computer-readable medium of claim 13, wherein frame differences and			
2	motion information are used to identify a scene cut.				
1	16. The	computer-readable medium of claim 13, wherein the reference coordinate			
2	system is polar coordinates.				
1	17. The	computer-readable medium of claim 13, wherein the percentages of each			
2	frame covered by the at least two largest regions are determined from the number of pixels in				
3	each region as a per	each region as a percentage of the total number of pixels in a frame.			

- 1 18. The computer-readable medium of claim 13, wherein the statistical measure is a
- 2 variance.